require RF voice/data connectivity with the agency responsible for controlling these vehicles.

5.6 Public Travel Security: The incident commander may need access to data from wide spread security devices. Data connectivity is needed between the incident liaison officer and the organization monitoring the security devices.

5.7 Hazardous Materials Incident Response: The incident commander needs access to all HAZMAT data collected by the responsible monitoring organization. This will require voice/data RF connectivity between the incident commander and the agency. The incident commander will need a portable reader if the HAZMAT vehicle has HAZMAT data stored in an on-vehicle Dedicated Short Range Communications (DSRC) transponder.

5.8 International Border Crossing: DSRC systems are used to allow pre-cleared (safety status, credentials, weight etc.) commercial vehicles to proceed across international borders without stopping. Location and other pertinent information on commercial vehicles attempting to cross in violation needs to be sent to registration, fuel tax, immigration, law enforcement, customs, and state transportation agencies.

5.9 Emergency Vehicle Management (EVM): The incident commander needs full access to this system. A real time GIS display showing vehicle locations would be invaluable. Since the response will involve multiple agencies, the individual emergency vehicle tracking systems must be compatible. Data connection via an RF channel is needed to each responding agency that is utilizing an EVM system.

6 Task Force Interoperability Requirements of ITS User Services

The following sections detail the ITS user services listed in the "ITS and Public Safety Wireless Services " report and the operational requirements from the Operational Requirements Subcommittee report that would benefit from task force interoperability with public safety communications systems.

6.1 Enroute Driver Information; Route Guidance, Enroute Transit Information: Task force commanders need the ability to coordinate with the TMC responsible for sending information to drivers so that traffic flow would be routed to aid the task force operations. This will require a voice/data RF channel between the task force and the TMC.

6.2 Incident Management: Data and voice connectivity via RF channels are required between the task force commanders and the Traffic Management Center. The task force commander needs to be aware of any TMC decisions impacting the operations of the task force such as traffic flow, safety messages, traffic alerts.

6.3 Traffic Control: Data and voice RF connectivity are required between the task force commander and the TMC. The commander needs the ability to request specific traffic control measures be taken.

6.4 Public Transportation Management: System operators will need accurate information from the task force commanders to verify that management recommendations will produce the desired effects. Voice and data connectivity is required. The incident commander needs the capability to dispatch these vehicles if large scale evacuations are required. This will require RF voice/data connectivity with the agency responsible for controlling these vehicles.

6.5 Emergency Vehicle Management: Task force commanders need full access to this system. A real-time GIS display showing vehicle locations would be invaluable. Since the response will involve multiple agencies, the individual EVM systems must be compatible. Data connection via an RF channel is needed to each agency that is utilizing this system.

7 Interagency ITS Interoperability Conclusions

The following items must be addressed to achieve a high degree of interoperability:

7.1. Standardized ITS data formats and interfaces are required to ensure that real time incident data can be shared by multiple agencies.

7.2. Agencies need an automated, electronic means of sharing incident data on a day-to-day basis.

7.3. Agencies need to develop policies to ensure that relevant data are shared with other organizations.

7.4. Incident and task force commanders need full coordination capabilities with all affected traffic management centers. This will require voice/data/video connectivity over RF channels.

8 ITS Device Interoperability

8.1 The second aspect of ITS interoperability is the requirement that data from ITS devices must be accessible to field deployed units from multiple agencies on a nationwide basis. Technology and frequency plan standards must be developed and implemented if this goal is to be reached using public safety radio systems for wide area communications. ITS communications based on one-way broadcast (likely using FM subcarrier) or DSRC transponders will require public safety vehicles to be equipped with these new systems. Efforts are underway

by various organizations to standardize the protocols for reception of FM subcarrier and DSRC. If successful, single nationwide interoperable devices will be available for use by public safety personnel. Wide area communications are expected to be based on commercially available services such as cellular radio, ESMR and PCS and is expected to vary from region to region.

8.2 The key issue is how public safety field units will receive data from numerous types of ITS devices without purchasing a different receiver for each system and for each region of operation. Wide area mobile communications for ITS will be selected by the locality or the service provider offering the ITS user service. Public safety agencies have the option of installing a data interface with a TMC, transit management center, or independent service provider, and integrating the required ITS-related information onto the public safety radio systems. If these systems have interoperable modes, then ITS information can be made interoperable provided the message formats are standardized.

9 ITS Device Interoperability Conclusions

The following areas must be addressed to achieve the desired interoperability:

9.1. Technology and message format standards are required for broadcast and DSRC systems providing ITS-related information. Message format standards are required for wide area wireless systems.

9.2. Public Safety agencies that are not leasing commercial wide-area wireless communications services have the option of integrating information from traffic management, transit management, and emergency management centers over their own radio system, and developing the ability to share the information over mutual aid, task force, or any other interoperable wireless channel. Agencies leasing commercial wide area wireless service will likely have to lease equipment from a service provider that is offering the ITS services in the location the agency needs to operate in.

9.3. A national frequency plan would ensure data are available to any responding agency in any location.